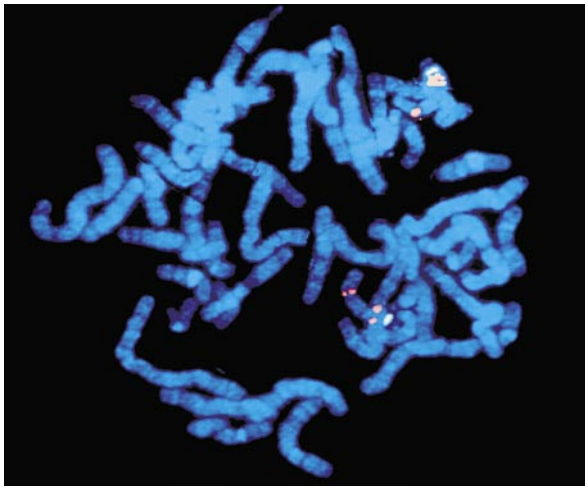
Inquiry

Research Pursuits and Creative Activity



Focusing on Autism

Researchers in the College of Public Health and the Carver College of Medicine will collaborate in one of the first federal research centers established to examine the biomedical and behavioral aspects of autism.

Iowa investigators, led by Tom Wassink, assistant professor of psychiatry; Veronica Vieland, professor of biostatistics, psychiatry, and genetics; and Val Sheffield, professor of pediatrics and a Howard Hughes Medical Institute associate investigator, will collaborate with researchers at the University of North Carolina, Chapel Hill. The five-year research project funded by the National Institutes of Health focuses on gene-brain behavior relationships in autism. The focus of the UI team is the discovery of the autism gene.

Autism is a brain disorder that affects social, communicative, and behavioral functioning from an early age. It is a lifelong condition for which there currently is no cure. Although it is known that genetics and brain dysfunction are involved in autism, exact causes have yet to be identified.

Manifesto Destiny

Members of the James Gang rode from Iowa City to the home of the blues and the birthplace of rock-and-roll this past May to draft a document called the Memphis Manifesto. According to the group, the manifesto is a declaration of steps cities should take to build communities of the "creative class."

A group of University of Iowa volunteers, the James Gang has as its aim the flourishing of imagination in the sciences, humanities, business, and arts. Seven students from the gang met in Memphis with the rest of the "Creative 100" chosen by the Richard Florida Creativity Group to participate in writing the manifesto. Richard Florida, a public policy and economic development professor and director of the Software Center at Carnegie Mellon University, contends that a city's success depends largely on whether it can attract the creative class by cultivating the arts, music, nightlife, and historic districts. Author of *The Rise of the Creative Class: And How It's Transforming Work, Leisure, Community and Everyday Life*, Florida believes that profound changes in our culture, work, and everyday lives stem from the rise of creativity as an economic force.

The seven Iowa students who helped draft the national manifesto are Jacek Pruski, a junior environmental economics and policy major; Amanda Styron, a junior economics major; Mike Brooks, a senior literature, science, and the arts major; Spencer Griffin, a junior theatre arts and entrepreneurship double major; Jesse Elliott, senior political science and literature, science, and the arts double major; Alex Johnson, senior psychology, philosophy, and journalism triple major; and Ellie Azoff, sophomore English and international studies double major. They sent copies of the manifesto to government leaders in cities around the United States this summer.

UI, ISU, and UNI Form REEES

Students at Iowa's three state universities will have expanded access to courses in Russian and Eastern European languages, culture, and politics through the new Iowa Russian, East European, and Eurasian Studies (REEES) Distance Learning Consortium. The consortium is being established through a $320,000 grant from the U.S. Department of Education.

The grant will allow The University of Iowa, Iowa State University, and the University of Northern Iowa to pool their resources and offer a combined curriculum in Russian and East European studies.

The consortium will focus on offering Czech, Polish, and Serbian-Croatian language instruction, with new English-language courses on Eurasian history, literature, politics, and other topics.

Boost to Child Labor Resources

The University of Iowa Center for Human Rights has won a $300,000 grant from the U.S. Department of Labor to expand the center's Child Labor Research Initiative. This brings total federal funding for the project to $1.2 million, including the initial $900,000 grant that got the program started two years ago. Burns Weston, center director and emeritus professor of law, says the bulk of the new funding would be used to broaden and deepen the Child Labor Public Education Program, which is working to focus public attention, especially among trade unions, on various aspects of child labor abuses, including international trade, workers' rights, and children's health.

Courting Attention

Who can better predict the decisions of the U.S. Supreme Court, man or machine? UI law professor Stephanos Bibas is working on a project at Washington University in St. Louis to find out.

Bibas is participating in Washington University's Supreme Court Forecasting Project—the result of a friendly disagreement between political scientists and legal scholars on whether computer software of human gray matter can better foretell the outcomes of court cases. But Bibas joins 59 other legal scholars from around the country who believe that court outcomes are based on many unpredictable factors as well as on nuanced judicial philosophies that tend to be a bit more fluid than political ideologies.

Bibas and the legal scholars will offer their predictions of cases heard during the Supreme Court's 2002-03 term. At the end of the term, the legal scholars will compare their predictions to the predictions of the computer models designed by political scholars.

Hospital Violence

Hospital and health care workers are at high risk for experiencing violence in the workplace. Each year, more than 900,000 medical workers report that they are victims of violence at work, and more than 2,600 of these victimizations result in serious injury, according to the Bureau of Justice Statistics.

"Violence against hospital workers typically is committed by patients, but upset family members also lash out verbally and physically at staff," says Corinne Peek-Asa, associate professor of occupational and environmental health. "Some of the common risk factors for hospital violence include working with potentially volatile people, working alone or in understaffed conditions, inadequate security and lighting, and lack of staff training and policies for managing the working environment."

Peek-Asa has received a $1.2 million, three-year grant from the National Institute for Occupational Safety and Health to study the effectiveness of initiatives designed to reduce workplace violence against health care workers.

Don't Try This One at Home!

Anyone smart enough to conduct scientific research on a Big Ten campus probably would know better than to drink and drive. And yet, some researchers at Iowa are telling people to do just that.

They know what they're doing, though. They're researchers at The University of Iowa's National Advanced Driving Simulator (NADS), the largest and most sophisticated research-oriented driving simulator in the world. They will get volunteers drunk enough to reach various levels of blood alcohol concentration, anywhere from 0.02 percent to as high as 0.10 percent, and then place them behind the wheel. The juiced-up volunteers will be driving a three-ton, $81 million simulator that can recreate every traffic scenario computer programmers can design, from wintry highways at night to urban intersections terrorized by red light–running SUVs. Researchers also will introduce such behind-the-wheel distractions as cell phones, fast food, drinks, and CD or radio switching. They'll use a $2.9 million award to test the performance and reaction times of their drunk drivers.

"This work may help us understand the effects of alcohol in situations known to be overrepresented for alcohol-related crashes, so that we might one day see fewer such crashes," says Ginger Watson, NADS principal investigator.

Active Voice

Katherine Eberle, a member of the voice faculty in the School of Music, received the 13th Annual Van Lawrence Fellowship Award from the Voice Foundation in Philadelphia this past June, during the foundation's 32nd Annual Symposium on Care of the Professional Voice.

Along with the $1,000 award, the foundation will give Eberle help in preparation of an article on "Perceptual Acoustic Assessments," an outcome of her research and recording activities.

An international organization, the Voice Foundation is dedicated to solving voice problems. According to the foundation's web page, "the goal of the Voice Foundation is to understand the voice and improve its quality and care."

Baby Bedlam

Imagine the mental chaos of not being able to tune out useless information bombarding us every day. This is the world of an infant—surrounded by multiple toys with a sibling playing nearby while the television picture changes second by second and a dog barks in the neighbor's yard. How do they learn what to ignore and what to pay attention to?

That question is at the heart of ongoing research by Lisa Oakes, associate professor of psychology.

Her latest study, published in the November/December 2002 issue of *Child Development*, shows that sometime between the ages of six-and-a-half months and nine months, infants develop skills that help them control what psychologists call their attentional focus, so that they are not as easily distracted.

Inquiry

Nothing But the Tooth

While tooth decay has become less of a problem for many preschool-age children in recent years, low-income and minority children continue to have a higher rate of caries (cavity-causing tooth decay). To understand this disparity, John Warren, assistant professor of preventive and community dentistry, will look at the causes of tooth decay in low-income and minority children and determine how to address the problem for future preventive care.

"It's a problem that needs attention, as it is the most common childhood illness," says Warren, who was awarded a grant by the National Institute for Dental and Craniofacial Research to study the problem. "It doesn't go away by itself and is expensive to treat, especially in young children."

For 18 months, Warren will follow a group of about 300 one-year-old children enrolled in WIC (a government program aimed at improving nutrition for women, infants, and children) in Muscatine and Louisa counties, which have large Hispanic populations. The study will collect information on caries occurrence, beverage consumption, fluoride exposures, levels of Streptococcus mutans (a bacteria that can cause tooth decay) and the clonal type of the bacteria, and host genetic markers (which may include a genetic predisposition to tooth decay).

Previous studies on the topic have taken a one-time look at the situation. To help create possible intervention and preventive care, a continuous, longitudinal study with a "before" and "after" element is needed, Warren says. Looking at one-year-olds is also a unique aspect of Warren's study.

Putting Technology within Reach

The National Institute on Disability and Rehabilitation Research (NIDRR) of the U.S. Department of Education has awarded a $1.5 million grant to the Law, Health Policy & Disability Center in the College of Law to study how to give disabled persons better access to technology.

The project, Technology for Independence: A Community-Based Resource Center, is designed to help community disability organizations across the United States develop research projects that increase access to and use of technology by persons with disabilities.

Peter Blanck, Kierscht Professor of Law, director of the disability law center and the principal investigator of the project, will work with Lex Frieden, director of Independent Living Research Utilization at the Baylor College of Medicine and chair of the National Council on Disability. Over the next five years, the project will help community organizations conduct research through web conferences, annual symposia, and the selection of a blue-ribbon panel of consulting researchers with disabilities.

Collaborative Genetic Lab Work

A new Center for Bioinformatics and Computational Biology will bring together researchers from all over campus to study the genetic basis of human disease and other biomedical phenomena, according to Tom Casavant, professor of electrical and computer engineering and the center's director.

An outgrowth of the College of Engineering's Coordinated Laboratory for Computational Genomics, the new center, housed in the Seamans Center for the Engineering Arts and Sciences, builds upon more than seven years of collaboration between the Carver College of Medicine and the College of Engineering in the deployment of applied computational science in the fields of genomics, genetics, molecular biology, and their applications for medical research.

Such collaborations have investigated genotyping, genetic linkage analysis, gene mapping, and other phenomena, and have attracted more than $35 million in external funding to The University of Iowa.

Tobacco Cured

Smokers often cite advice from a physician as having been very influential in the decision to give up their habit. A new nationwide project will help medical school faculty at The University of Iowa develop a curriculum that will teach students how to dispense that advice.

The Carver College of Medicine already teaches tobacco-use prevention and cessation. Kristi Ferguson, project director and associate professor of medicine, says funds from the National Cancer Institute program will cover staff time and travel costs.

Learning the skills should help physicians become more comfortable in dealing with these issues in medical practice, notes Jeffrey Wilson, pulmonary specialist and associate professor (clinical) of internal medicine. Doctors need to know how to elicit a smoking history from patients, how to educate patients about the risks of smoking, and how to advise patients about successful quitting strategies, Wilson says.

Central to Public Health

Research has shown that wide variation exists in the preventive care and medical treatment provided to patients with similar health problems.

The Colleges of Public Health and Pharmacy recently established the Health Effectiveness Research Center, whose mission is to provide expertise, training, mentoring, and databases for research assessing variation in use of preventive and therapeutic interventions and the consequences of this variation.

"As an example, in the 1990s approximately 77 percent of children enrolled in the Iowa Medicaid program who were diagnosed with middle ear infections initially received antibiotics," says center director Elizabeth Chrischilles, professor of epidemiology. "Is this rate of treatment too high or too low? Should policymakers stress increased use of antibiotics or more judicious use? Which children are most apt to benefit from antibiotic treatments? These are the types of questions that we hope to answer through our research."

Fish Story

Peaceful coexistence. Is it possible? In the Pacific Northwest, salmon and hydroelectric dam owners on the Columbia River are putting the idea to a test, with a little help from their friends in the College of Engineering's IIHR—Hydroscience & Engineering department.

There seem to be serious incompatibility issues to resolve. But the department has received a three-year, $6.8 million contract extension from a public utility district in Grant County, Wash., to continue its search for solutions.

What's at stake? Often only 50 percent of the salmon live past the dams. Fish that swim through the turbines emerge stressed and disoriented, making them vulnerable to predatory birds and fish waiting downstream. While some environmentalists and others have called for dismantling some of the dozen or so Columbia River dams, Iowa engineers believe they can open a door for cooperation between Washington state power companies and the billion-dollar salmon fishing industry.

"The solution is to route the young salmon around the turbines and to reduce levels of excess nitrogen at the base of the dams," says Larry Weber, associate professor of civil and environmental engineering.

Weber and other IIHR researchers use large-scale models, including an indoor, 100-foot-wide by 160-foot-long model of the Wanapum Forebay Dam on the Columbia River and a one-mile length of the Wanapum downstream waterway, also called the tailrace. They will make modifications to existing reservoir models of the Wanapum and Priest Rapids dams and the Wanapum tailrace. They also will build and test a new model of the Priest Rapids.

Advanced computer technology also will support the cause. Weber and his colleagues are using a software program developed at IIHR to simulate water flow and fish passage along the Columbia River and, in turn, determine the effectiveness of water deflectors and nonturbine passage facilities.

The new funding brings the total amount received to about $16 million since the current contract began in 1990. The project is a continuation of earlier fish passage studies initiated by Iowa engineering professor Jacob Odgaard in 1980 with a $6 million contract. Odgaard developed a system of stainless steel screens that diverts baby salmon around plant turbines. After more than a decade of research, his model has shown increased survival rates of the fish. On rivers where once only 15 to 30 percent of salmon lived to reach their spawning grounds, installation of Odgaard's steel screens has allowed more than 70 percent of the fish to move safely beyond the dams.

Civil engineering students work with Associate Professor Larry Weber (not shown) to find ways to make the Columbia River's dams and turbines safer for salmon migrating upriver to their spawning grounds. Saving the salmon could buoy up the Pacific Northwest's fishing industry.